Volunteer Lake Assessment Program Individual Lake Reports

DANFORTH POND, LOWER, FREEDOM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	11,776	**Max. Depth (m):**	16.8	**Flushing Rate (yr^{-1}):**	31.6
Surface Area (Ac.):	32	**Mean Depth (m):**	7.1	**P Retention Coef:**	0.07
Shore Length (m):	1,400	**Volume (m^3):**	918,500	**Elevation (ft):**	408

TROPHIC CLASSIFICATION

Year	Trophic class
1983	MESOTROPHIC
2001	MESOTROPHIC

KNOWN EXOTIC SPECIES

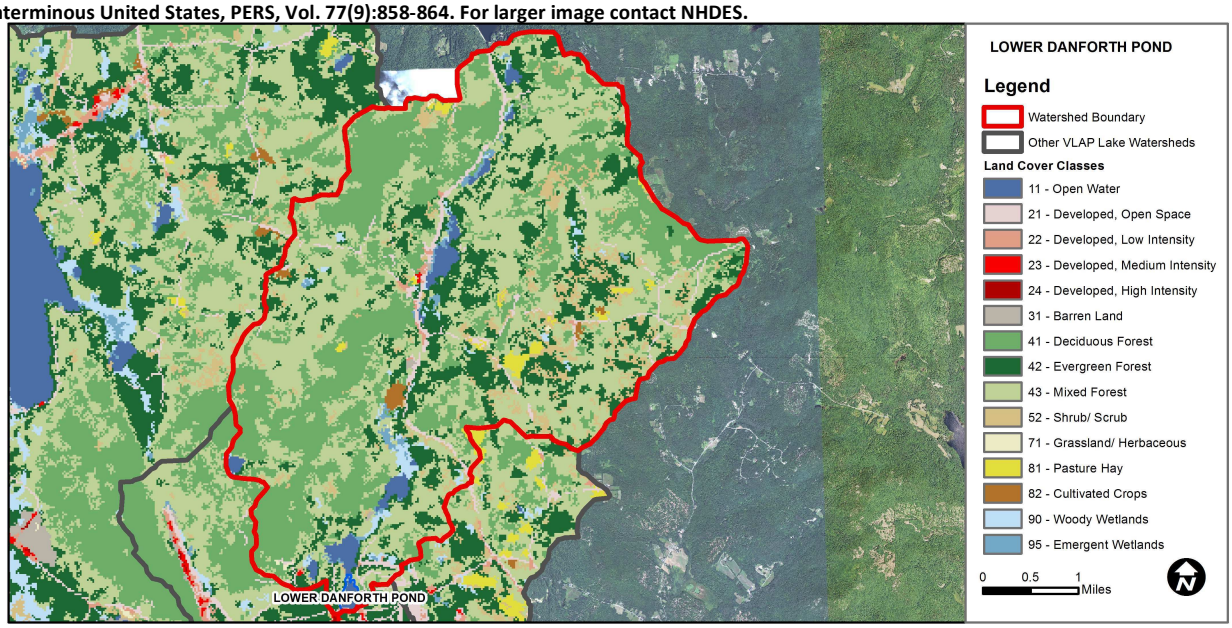
Variable Milfoil

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



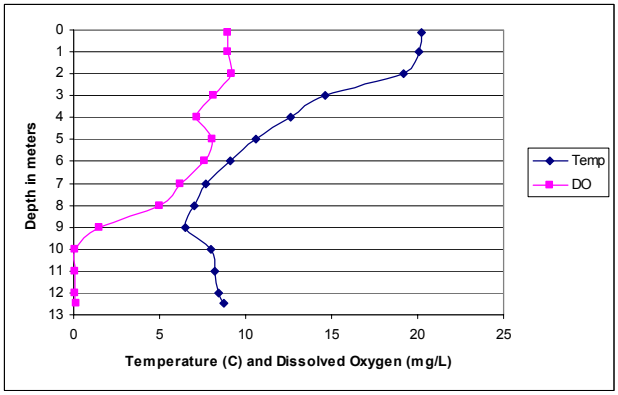
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	2.09	Barren Land	0.1	Grassland/Herbaceous	0.08
Developed-Open Space	2.61	Deciduous Forest	29.82	Pasture Hay	0.85
Developed-Low Intensity	0.26	Evergreen Forest	16.21	Cultivated Crops	0.41
Developed-Medium Intensity	0.03	Mixed Forest	40.01	Woody Wetlands	1.18
Developed-High Intensity	0	Shrub-Scrub	5.62	Emergent Wetlands	0.74

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LOWER DANFORTH POND, FREEDOM, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic*)

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated and above the NH lake median in 2012. Historical trend analysis indicates chlorophyll levels tend to fluctuate from year to year.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride levels were average for most NH lakes. Conductivity increased in the hypolimnion (lower water layer) due to minerals released from lake sediments.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low in 2012. Historical trend analysis indicates phosphorus levels tend to fluctuate from year to year, however have decreased from elevated levels measured from 2003 - 2009.
- **TRANSPARENCY:** Transparency was not measured in 2012, however has remained relatively stable since monitoring began ranging from 3.5 to 4.5 meters from 2003 – 2011.
- **TURBIDITY:** Deep spot turbidity was low in 2012.
- **PH:** Eplimnetic (upper water layer) pH levels were sufficient to support aquatic life, however metalimnion (middle water layer) and hypolimnion (lower water layer) pH levels were lower than desirable.
- **RECOMMENDED ACTIONS:** Conduct monthly water quality monitoring (June, July, August), phytoplankton haul, and dissolved oxygen and temperature profile. Continue Variable milfoil management activities.

Dissolved Oxygen & Temperature Profile



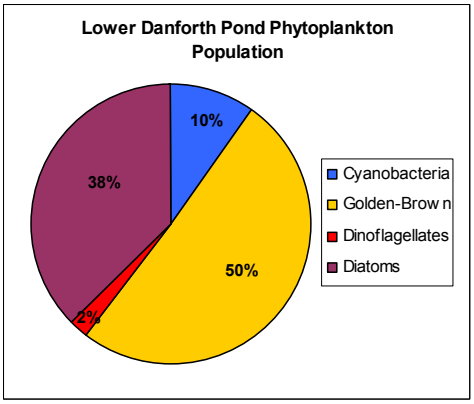


Table 1. 2012 Average Water Quality Data for LOWER DANFORTH POND

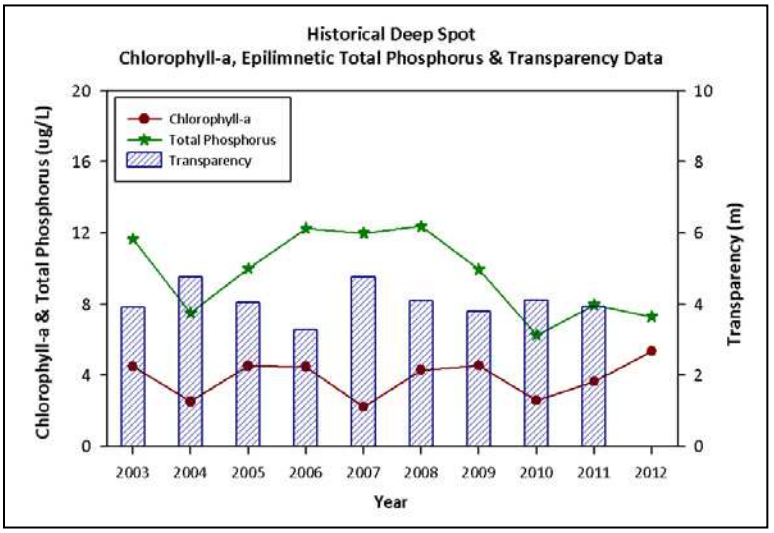
Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Turb. ntu	pH
Deep Epilimnion	6.8	5.36	5	43.4	7	0.55	6.64
Deep Metalimnion				54.0	7	0.94	6.36
Deep Hypolimnion				65.2	8	0.81	6.17

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.



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